

Abstract of the Disclosure

Methods and systems for controlling motion of and tracking a mechanically unattached magnetic probe are disclosed. One system for controlling motion of mechanically unattached magnetic probe may include a magnetic coil and pole assembly. The magnetic coil and pole assembly includes at least one pole carrier. The pole carrier includes a light transmissive substrate and a plurality of magnetic poles being patterned on the substrate for applying force to a mechanically unattached magnetic probe. A magnetic drive core provides a return path for magnetic flux flowing between the poles. A plurality of magnetic coils are wound around the magnetic drive core for conducting current and applying magnetic force to the probe through the pole pieces. A computer maintains the position of the probe within a volume defined by an optical tracking system by moving the probe and the system under test.